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Hymenochaetaceae from México 6. A new *Fuscoporia* species from the Sonoran desert

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Abstract — *Fuscoporia xerophila* is described as a new species from México. The collected specimens were found on dead or living wood in xerophilous scrub in the central plain of the Sonoran desert, Sonora State, México. This species is characterized by its resupinate basidiomata with medium size pores (4–5 per mm), its hymenial setae and hyphal setae, and basidiospores that are are subglobose, hyaline, smooth, and thin-walled. A key to Mexican species of *Fuscoporia* is presented.

Key words — *Agaricomycetes*, *Hymenochaetales,* polyporoid fungi, taxonomy

Introduction

Fuscoporia was described by Murrill (1907) with *F. ferruginosa* as the type species. Many mycologists (Overholts 1953, Lowe 1966, Ryvarden & Johansen 1980, Gilbertson & Ryvarden 1987, Larsen & Cobb-Poulle 1990, Ryvarden 1991) have regarded this genus as synonymous with *Poria* Adans. and *Phellinus* Quél. At the present time, Fiasson & Niemelä (1984), Wagner & Fischer (2001, 2002), Groposo et al. (2007), Baltazar et al. (2009), Baltazar & Gibertoni (2010), and Raymundo et al. (2013) recognize *Fuscoporia* as a monophyletic genus characterized by its annual to perennial and resupinate to pileate basidiomata with poroid hymenophore, its dimitic hyphal system with encrusted generative hyphae in the dissepiments and trama, hymenial setae that are always present and hyphal setae that are either present or absent, and basidiospores that are hyaline, non-amyloid, acyanophilous, subglobose, ellipsoid, cylindrical to allantoid, thin-walled, and smooth.

Recently, Raymundo et al. (2013) reported 14 *Fuscoporia* species from México: *F. callimorpha* (Lév.) Groposo et al., *F. chrysea* (Lév.) Baltazar &

Gibertoni, *F. contigua* (Pers.) G. Cunn., *F. contiguiformis* (Pilát) Raymundo et al., *F. coronadensis* (Rizzo et al.) Raymundo et al., *F. ferrea* (Pers.) G. Cunn., *F. ferruginosa* (Schrad.) Murrill, *F. gilva* (Schwein.) T. Wagner & M. Fisch., *F. mesophila* Raymundo et al., *F. nicaraguensis* Murrill, *F. palmicola* (Berk. & M.A. Curtis) Bondartseva & S. Herrera, *F. rhabarbarina* (Berk.) Groposo et al., *F. viticola* (Schwein.) Murrill, and *F. wahlbergii* (Fr.) T. Wagner & M. Fisch.

In 2009 several *Fuscoporia* specimens were collected during a survey of Sonoran desert in Sonora State, México, that did not represent any known species of *Fuscoporia*. They are described here as a new taxon.

Materials & methods

The Sonoran desert covers 223,009 km^2, of which 29% lies in Arizona and California, U.S.A., and 71% in State of Sonora, México (Robles-Gil et al. 2001). It presents a moderate biological richness with xerophilous scrub and dry or very dry weather. The examined specimens were collected in Sonora State in August, 2009, and are deposited in the Herbarium, Instituto Politécnico Nacional, México (ENCB) with an isotype deposited in the fungal collections of the of the Universidad Estatal de Sonora, México (UES). Longitudes and latitudes were obtained with GPS eTrex (Garmin). Herbaria acronyms follow Thiers (2012) and colors are coded according to Kornerup & Wanscher (1978). Morphological examinations were conducted using protocols outlined by Cifuentes et al. (1986) and Ryvarden (1991). Anatomical characters were measured from rehydrated tissues in 5% aqueous KOH and Melzer's reagent. Line drawings were made to scale using an optical light microscopy with clear camera and macroscopic photographs were taken with a Nikon Coolpix 4300. The meanings of some terms are based on Ulloa & Hanlin (2012).

Taxonomy

Fuscoporia xerophila Raymundo, R. Valenz. & Esqueda, **sp. nov.** Figs 1–9

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Differs from *Fuscoporia contigua* by its smaller pores, its shorter and wider subglobose basidiospores, and its xeric habitat.

TYPE: México, Sonora, municipality of Guaymas, Francisco Villa "El Tigre", 28°06′56.3″N 111°01′35.2″W, alt. 140 m, 21.VIII.2009, R. Valenzuela 13772 (**Holotype**, ENCB, **isotype**, UES).

Etymology: Referring to its occurrence in xerophilous scrub with very dry weather.

Basidiomata annual to perennial, resupinate, adnate, becoming widely effused, reaching 300–600 × 80–150 × 1–3 mm, corky to woody, easily separable of the substrate, cracked in dry and old specimens. margin sterile, ≤3 mm wide, golden brown (5D7), yellowish brown (5F7) to grayish brown (6E3), matted, fimbriate. hymenophore poroid, cracked with age or in dry specimens, grayish brown (6D–E3) to brown (6E4–5), dark brown (6F6) in old specimens; pores angular to irregular, (3–)4–5 per mm, 200–240 × 144–176 μm (av. 217

Figs 1–9. *Fuscoporia xerophila* (1-7,9—holotype, ENCB Valenzuela 13772; 8—ENCB Raymundo 3233): 1. Basidiospores. 2. Hymenial setae. 3. Hyphal setae. 4. Generative hyphae strongly incrusted with crystals. 5. Hymenial setae. 6–9. Basidiomes. Scale bars: 1–3 = 8 μm; 4–5 = 5 μm; 6 = 2 mm; 7–9 = 100 mm.

× 160 μm); dissepiments thin to thick and lacerated, (48–)80–140(–160) μm thick, (av. 112 μm); tubes ≤1 mm deep, 1–3 layers, tough to woody, grayish brown (6E3) to brown (6E5). context or subiculum very thin, <1 mm thick, yellowish brown (5F7), fibrous, tough, azonate.

Hyphal system dimitic, generative hyphae simple-septated, hyaline to pale yellow in KOH, simple to slightly branched, thin-walled, 2.4–3.2 µm in diam.; skeletal hyphae yellowish brown to reddish brown, unbranched or rare branched, thick-walled, 3.2–4.8 µm in diam. hymenophoral trama composed by interwoven hyphae, generative hyphae hyaline to pale yellow in KOH, thin-walled, simple to slightly branched, 2.4–3.2 µm in diam., hyphae projecting beyond the hymenia and in the edge of dissepiments strongly encrusted with crystals; skeletal hyphae yellowish brown to reddish brown in KOH, unbranched, thick-walled, 3.2–4.8 µm in diam. contextual trama with interwoven hyphae, generative hyphae rare, hyaline to pale yellow in KOH, simple to scarcely branched, thick-walled, 1.6–2.4 µm in diam.; skeletal hyphae dominant, reddish brown in KOH, unbranched, thick-walled, 2.4–4.8 µm in diam. hyphal setae 88–180 × 12–20 µm, straight, lanceolate to lageniform, acute, dark brown in KOH, thick-walled, only found in subiculum and margin. hymenial setae 40–52 × 6.4–8 µm, ventricose to ventricose-rostrate, acute, reddish brown to dark brown in KOH, thick-walled. basidia not observed. basidiospores 5.12–5.46 × 4–4.48 µm, subglobose, hyaline in KOH, inamyloid, thin-walled, smooth.

Ecology & distribution— The species grows on live and dead wood of *Acacia* in xerophilous scrub, causing a white rot. It is known only from the type locality in Sonoran desert in México.

Additional specimens examined: **MÉXICO, SONORA**, municipality of Guaymas, Francisco Villa "El Tigre", 28°06′56.3″N 111°01′35.2″W, alt. 140 m, 21.VIII.2009, T. Raymundo 3229, 3230, 3232, 3233 (ENCB); R. Valenzuela 13771, 13773 (ENCB).

Comments— The species is characterized by its resupinate basidiomata with angular to irregular pores, hyphal setae present in subiculum and margin, and subglobose basidiospores. *Fuscoporia contigua* is similar to *F. xerophila* but has larger pores (1–3 per mm), hyphal setae in the floccose margin, tramal and hymenial setae in the trama, and longer oblong to subcylindrical (5–7 × 3–3.5 µm) basidiospores. Further, *F. contigua* grows on dead wood in tropical forests in México and the Neotropics (Ryvarden & Guzmán 1993, Ryvarden 2004), on *Quercus* in China (Dai 1999), and on bamboo in Brazil (Coelho et al. 2009). Other related species are *F. ferruginosa* and *F. nicaraguensis*, which have resupinate basidiomata and hyphal setae in the margin or trama. Further, both have small circular pores (7–9 per mm) and grow on dead wood of tropical forests; *F. ferruginosa* has longer cylindrical (5–7 × 2.4–3.5 µm) basidiospores while *F. nicaraguensis* has smaller globose (2.4–4.4 µm in diam.) basidiospores (Larsen & Cobb-Poulle 1990, Raymundo et al. 2013).

Key to *Fuscoporia* species in México

1. Hyphal setae present in trama, margin and/or subiculum **2**
1. Hyphal setae absent **5**

2. Basidiospores globose to subglobose, basidiomata resupinate **3**
2. Basidiospores oblong to cylindrical, basidiomata resupinate to pileate **4**
3. Pores 7–9 per mm, hymenial setae 24–36 × 6.4–9.2 µm, subulate, straight and hyphal setae in the sterile margin 60–136 × 6–12 µm, basidiospores 2.4–4.4 µm, globose ..... ***F. nicaraguensis***
3. Pores 4–5 per mm, hymenial setae 48–52 × 6.4–8 µm, ventricose to ventricose-rostrate, straight; hyphal setae in the margin or subiculum 88–180 × 12–20 µm, straight, lanceolate to lageniform; basidiospores 5.12–5.46 × 4–4.48 µm, subglobose ..... ***F. xerophila***
4. Pores 1–3 per mm, hymenial setae 40–60 × 6–8 µm, subulate, straight, tramal setae 50–90 × 5–12 µm, subulate, straight and hyphal setae in the floccose margin 80–120 × 6–12 µm, basidiospores 5–7 × 2.4–3.5 µm, subcylindrical to oblong ..... ***F. contigua***
4. Pores 7–9 per mm, hymenial setae 30–60 × 6–10 µm, subulate, straight and hyphal setae in the sterile margin 90–150 × 6–10 µm, basidiospores 5–7 × 2.4–3.5 µm, cylindrical ..... ***F. ferruginosa***
5. Basidiomata resupinate to effused-reflexed **6**
5. Basidiomata pileate-sessile **9**
6. Pores 1–3 per mm **7**
6. Pores 4–6 per mm **8**
7. Basidiospores oblong to cylindrical, 4–5 × 2–2.5 µm, pores angular, sinuous to labyrinthiform, hymenial setae 32–64 × 6.4–7.2 µm, subulate ..... ***F. palmicola***
7. Basidiospores cylindrical to slightly curved, 7–8 × 1.6–2 µm, pores angular, hymenial setae 50–70 × 5–7 µm, subulate ..... ***F. contiguiformis***
8. Basidiospores broadly ellipsoid to subglobose, 3.2–4 × 2.4–3 µm, hymenial setae 30–50 ×5–8 µm, ventricose to subulate ..... ***F. chrysea***
8. Basidiospores cylindrical, 5.5–7.6 × 2.4–3.2 µm, hymenial setae 27–37 × 5–7 µm, subulate ..... ***F. ferrea***
9. Basidiospores cylindrical to slightly curved, 7–9 × 1.5–2 µm, hymenial setae 25–75 × 5–8 µm, subulate ..... ***F. viticola***
9. Basidiospores globose to subcylindrical, never curved and >2 µm in diameter **10**
10. Hymenial setae hooked, some straight, 25–44 × 8–13.2 µm, basidiospores subglobose to ellipsoid, basidiomata applanate, dimidiate to broadly attached, pores 6–8 per mm, circular to elongate ..... ***F. wahlbergii***
10. Hymenial setae straight **11**
11. Basidiomata large, 100–350 × 150–300 × 25–100 mm, applanate, dimidiate to broadly attached, pores (5–)6–7(–8) per mm, circular, hymenial setae 20–32 × 6.4–9 µm, ventricose to subulate, basidiospores 3.2–5.6(–6) × 3.2–4 µm, subglobose to ovoid, growing only on conifers ..... ***F. coronadensis***
11. Basidiomata small to medium size, growing only on angiosperms **12**

12. Pileus surface with a distinctive black crust, glabrous and sulcate, pores 6–9 per mm, hymenial setae 20–30 × 4.8–7.2 µm, subulate, basidiospores 3.2–4 × 2–3 µm, ellipsoid ..... ***F. rhabarbarina***

12. Pileus surface without a distinctive black crust **13**

13. Basidiomata triquetrous to ungulate, pileus surface velutinate to tomentose, concentrically sulcate, pores 6–8 per mm, circular, hymenial setae 28–40 × 8.8–16 µm, ventricose, basidiospores 4.0 × 3.2–3.8 µm, subglobose to ovoid ..... ***F. mesophila***

13. Basidiomata applanate to convex, hymenial setae <10 µm broad **14**

14. Hymenial setae 16–28 × 6–8.8 µm, subulate to ventricose, basidiospores 3.6–4.8 × 2–3 µm, oblong to subcylindrical ..... ***F. callimorpha***

14. Hymenial setae 20–40 × 6–10.2 µm, ventricose to subulate, basidiospores 4–5 × 2.5–3 µm, narrowly ellipsoid to oblong ..... ***F. gilva***

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